It’s All About That Data:
Five Year Laboratory Trends from TB Elimination Cooperative Agreements

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Laboratory Capacity Team (LCT)/DTBE
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APHL National Laboratory Aspects of Tuberculosis Meeting
June 8th, 2015
Why do we collect all that data and what do we do with it?

IT’S ALL ABOUT THAT DATA
Why the Emphasis on Data

- We are all doing more with less
  - Greater emphasis on accountability
- Every dollar spent must have greatest possible impact
- Need to document Return on Investment (ROI)
  - Maximizing ROI for each program allows demonstration of impact – and may provide case for maintaining funding
- Collecting, analyzing, and reporting laboratory data fundamental to DTBE's Laboratory Capacity Team (LCT) mission

Maximizing CDC's Impact, Thomas R. Frieden, MD, MPH
Director, Centers for Disease Control and Prevention, May 16, 2011 CDC All-Hands Meeting
What do We do With the Data?

- Some used in funding formula calculations
- Provides LCT opportunities to be responsive and adaptive to needs of PHL
- Allows strengthening of capacity
  - evaluate laboratory services and systems
  - measure program impact
  - navigate change
  - improve service delivery in the prevention and control of tuberculosis
Sources of Data

- **Cooperative Agreement Applications**
  - Required elements
    - Workload
    - Turnaround times
  - Narratives
    - Methods
    - Algorithms

- **Site Visits**
  - More details regarding laboratory operations

- **National Surveillance Data**
  - How much TB testing is done in PHL?
Trends Analyzed

- Workload
- Turnaround Times
- Methods and Algorithms
- Comparisons to Surveillance Data
Workload Trends, 2009 – 2013

- Total no. specimens processed
- No. patients tested

2009: 272,157
2010: 257,005
2011: 239,892
2012: 237,761
2013: 223,370

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2010: 114,700
2011: 107,144
2012: 103,475
2013: 97,631
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<table>
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<tr>
<th>Year</th>
<th>No. patient DSTs</th>
<th>No. patient NAATs</th>
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<tbody>
<tr>
<td>2009</td>
<td>7,531</td>
<td>15,827</td>
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<tr>
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<td>7,217</td>
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*Workload Trends, 2009 – 2013, con’t.*
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- **No. patient DSTs**
- **No. patient NAATs**

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- Linear trend for Patient DSTs
- Linear trend for Patient NAATs
**CULTURE POSITIVITY, 2013**

- **PERCENT CULTURE POSITIVE FOR MTBC**
- **CUMULATIVE NUMBER OF LABORATORIES**

Mean = 4.3 %
In 2013, culture positivity increased as volume decreased (except for the 4 highest volume laboratories). Overall in U.S. PHL, 4.3% culture positivity was seen for MTBC.
National Trends in TAT

- Specimen Receipt: % w/in 1-day
- Smear: % w/in 1-day
- ID in 21 days
- DST in 28 days

<table>
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<tr>
<th>Year</th>
<th>Specimen Receipt</th>
<th>1-Day Smear</th>
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<td>49</td>
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National Trends in TAT

Percent Within Recommended Time

- Specimen Receipt: % w/in 1-day
- Smear: % w/in 1-day
- ID in 21 days
- DST: % rifampin w/in 17 days of ID
Trends in Primary Identification Methods

2009

- Accuprobe: 14
- HPLC: 38
- InnoLiPA: 1
- Sequencing: 1
- other/unknown: 1

2013

- Accuprobe: 13
- HPLC: 34
- InnoLiPA: 3
- Sequencing: 2
- other/unknown: 1
Trends in First-Line DST Methods

2010
- Bactec MGIT: 42
- Versa Trek: 2
- Referred to Other Lab: 6
- BacTec 460: 7

2015
- Bactec MGIT: 38
- Versa Trek: 12
- Trek Sensititre: 5
- Referred to Other Lab: 1
- Referred to DST Reference Center: 1
- Indirect Agar Proportion: 1
## Second-Line DST

### Second-line DST in U.S. PHL

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<thead>
<tr>
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<th>2010</th>
<th>2015</th>
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<tr>
<td>No. PHL performing SL–DST</td>
<td>18</td>
<td>17</td>
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<tr>
<td>No. PHL that reported SL–DST panel</td>
<td>16</td>
<td>14</td>
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<td>No. PHL testing at least 1 SL–INJ and 1 FQ</td>
<td>16</td>
<td>13</td>
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<tr>
<td>No. PHL testing &gt;1 FQ</td>
<td>4</td>
<td>3</td>
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<tr>
<td>No. PHL testing all 3 SL–INJ</td>
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Trends in NAAT Methods

- MTD: 2009 (31), 2015 (11)
- PCR: 2009 (15), 2015 (6)
- HAIN: 2009 (0), 2015 (1)
- XPERT: 2009 (0), 2015 (24)
- PYROSEQ: 2009 (0), 2015 (1)
- REFERRED: 2009 (9), 2015 (3)
- NOT OFFERED: 2009 (5), 2015 (0)
Trends in NAAT Algorithms

![Bar chart showing trends in NAAT Algorithms for years 2011 and 2013. The categories are Universal, Smear and Clinical Indicators, Smear Pos Only, Smear Pos, Smear Neg on Request Only, Request Only, and Unknown. The bars for each category show the counts for 2011 and 2013.](chart.png)
Comparisons to Surveillance Data

Chart 1: Denominators: Number of culture confirmed TB, and number of culture-confirmed TB that had DST done, U.S., 2013. Numerators, number of patients (+) for MTBC by culture in PHL, and number of patient DSTs done in PHL, 2013.

Chart 2: Denominator: Number of Culture confirmed TB cases, U.S. 2013. Numerator: Number of patients (+) for MTBC by NAAT in PHL, 2013.
Conclusions

- Volume of TB diagnostic testing is declining in the United States
  - NAAT is on the rise

- Substantial proportion of TB testing in United States is contributed by PHLs
  - Culture and DST proportion has remained stable or slightly increasing
  - NAAT proportion significantly increased from 2009

- PHLs are very diverse in their roles within jurisdictions

- PHLs are very adaptive
  - Uptake of rapidly changing technologies, changes in data-driven algorithms, increased collaborations with partners
### Individual Site and National Data Reports

Available 2:30pm – 3:00pm In This Room (during break) with the Laboratory Consultant for Your Site

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Acknowledgements

All of our TB Elimination Cooperative Agreement Public Health Laboratory Professionals
Association of Public Health Laboratories
CDC/DTBE/Laboratory Capacity Team

For more information please contact Centers for Disease Control and Prevention

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Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: http://www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.